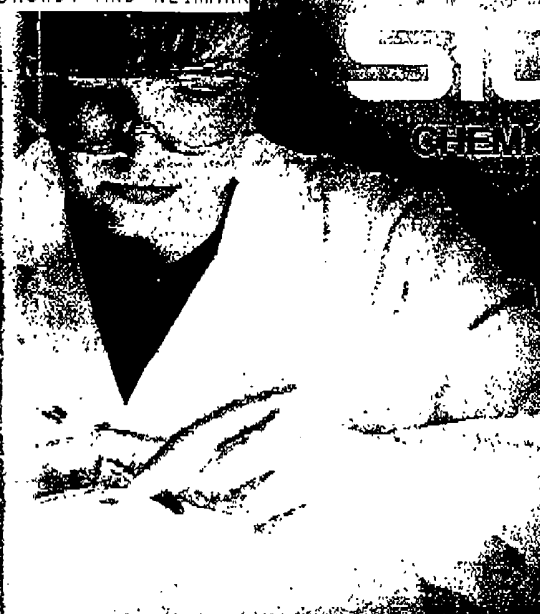


EXHIBIT B

SIGMA

CHEMICAL COMPANY

1996



BIOCHEMICALS ORGANIC COMPOUNDS AND DIAGNOSTIC REAGENTS

- ALPHABETICAL LIST
- BIOACTIVE PEPTIDES
- IMMUNOCHEMICALS
- MOLECULAR BIOLOGY
- TISSUE CULTURE
- OTHER PRODUCT GROUPS
- EQUIPMENT BOOKS AND SUPPLIES
- DIAGNOSTIC KITS AND REAGENTS
- NEW PRODUCTS
- PRODUCT INDEX

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For technical assistance, contact our technical service department.

800-325-3032

GENERAL INFORMATION

For general information, contact our general information department.

800-521-0986

BIOACTIVE PEPTIDES

BIOACTIN

MISCELLANEOUS PEPTIDES

MISCELLANEOUS PEPTIDES

PRODUCT NUMBER	US \$	PRODUCT NUMBER	US \$
(Continuation of)			
AMYLOID β-PROTEIN FRAGMENTS			
A 1075	Fragment 1-40 (Asp-Ala-Glu-Phe-Arg-His-Asp-Ser-Gly-Tyr-Glu-Val-His-His-Gln-Lys-Leu-Val-Phe-Phe-Ala-Glu-Val-Gly-Ser-Asn-Lys-Gly-Ala-Ile-Ile-Gly-Leu-Met-Val-Gly-Gly-Val-Val) Minimum 90% (HPLC) Peptide which deposits in the brains of Alzheimer's disease patients. Similar to A 5813, but produced by Sigma. Ref.: Yankner, B.A., et al., Science, 250, 279 (1990). [131438-79-4] FW 4329.8	100 μ g 50.00 500 μ g 166.25	
A 5813	Fragment 1-40 Minimum 80% (HPLC) [131438-79-4] FW 4329.8	100 μ g 52.50 500 μ g 175.00	
A 6925	Fragment 10-20 (Tyr-Glu-Val-His-His-Gln-Lys-Leu-Val-Phe-Phe) Minimum 97% (HPLC) Peptide content: Approx. 70% [152286-31-2] FW 1446.7	250 μ g 37.80 1 mg 105.00	
A 3180	Fragment 12-28 (Val-His-His-Gln-Lys-Leu-Val-Phe-Phe-Ala-Glu-Asp-Val-Gly-Ser-Asn-Lys) Minimum 97% (HPLC) Similar to A 8677, but produced by Sigma Ref.: Castano, E.M., et al., Biochem. Biophys. Res. Commun., 141, 782 (1986). [107015-83-8] FW 1955.2	250 μ g 42.00 500 μ g 70.00	
A 8677	Fragment 12-28 Minimum 97% (HPLC) [107015-83-8] FW 1955.2	250 μ g 44.00 500 μ g 73.50	
A 4559	Fragment 25-35 (Gly-Ser-Asn-Lys-Gly-Ala-Ile-Ile-Gly-Leu-Met) Minimum 97% (HPLC) Peptide content: Approx. 70% Functional domain of β -amyloid required for both neurotrophic and neurotoxic effects Ref.: Yankner, B.A., et al., Science, 250, 279 (1990). [131602-53-4] FW 1060.3	250 μ g 18.75 1 mg 52.50	

PRODUCT NUMBER	US \$	PRODUCT NUMBER	US \$
(Continuation of)			
AMYLOID β-PROTEIN FRAGMENTS			
A 5075	Fragment 31-35 (Ile-Ile-Gly-Leu-Met) Acetate Salt Minimum 95% (HPLC) Neurotoxic activity in brain tissue culture similar to that of fragment 1-40. Ref.: Penke, B., et al., Abstract P413, 13th American Peptide Symposium, Edmonton (1993). [149385-65-9] C ₂₂ H ₃₆ N ₁₀ O ₅ FW 545.7 (for free base)	1 mg 21.50 5 mg 71.50	
A 4950	Fragment 32-35 (Ile-Gly-Leu-Met) Acetate Salt Minimum 95% (HPLC) [151151-30-3] C ₁₉ H ₂₈ N ₁₀ O ₅ FW 432.6 (for free base)	1 mg 51.60 5 mg 172.00	
A 2326	Fragment 40-1 (Val-Val-Gly-Gly-Val-Met-Leu-Gly-Ile-Ile-Ala-Gly-Lys-Asn-Ser-Gly-Val-Asp-Glu-Ala-Phe-Phe-Val-Leu-Lys-Gln-His-His-Val-Glu-Tyr-Gly-Ser-Asp-His-Arg-Phe-Glu-Ala-Asp) Minimum 97% (HPLC) This is the inverted sequence of fragment 1-40. Ref.: Kowal, N.W., et al., Proc. Nat. Acad. Sci. USA, 88, 7247 (1991). [144409-99-4] FW 4329.8	100 μ g 55.15 500 μ g 183.75	
A 4318	ANANTIN (Cyclo[Gly-Phe-Ile-Gly-Trp-Gly-Asp- β -Asp-His-Phe-Gly-His-Tyr-Ser-Gly-Asp-Phe]) Minimum 97% (HPLC) A cyclic peptide from Streptomyces coereulescens, competitive antagonist at atrial natriuretic factor (ANF) receptors. Ref.: Weber, W., et al., J. Antibiot., 44, 164 (1991). [133658-45-4] FW 1871.0	250 μ g 95.40 1 mg 265.00	
A 6061	ANEMONIA SULCATA TOXIN II, ILE-ISOTOXIN (Gly-Ile-Pro-Cys-Leu-Cys-Asp-Ser-Asp-Gly-Pro-Ser-Val-Arg-Gly-Asn-Thr-Leu-Ser-Gly-Ile-Ile-Trp-Leu-Ala-Gly-Cys-Pro-Ser-Gly-Trp-His-Asn-Cys-Lys-Lys-His-Gly-Pro-Thr-Ile-Gly-Trp-Cys-Cys-Lys-Gln) [Disulfide Bridges: 4-44; 6-34; 27-45] Minimum 70% (HPLC) Ref.: Khan, A.R., et al., Toxicon, 24, 373 (1986). [143372-52-5] FW 4948.7	100 μ g 105.00 FO8 Sigma	
A 8429	ANGIOGENIN FRAGMENTS Ref.: Rybak, S.M., et al., Biochem. Biophys. Res. Commun., 162, 535 (1989). Fragment 108-122 (Glu-Asn-Gly-Leu-Pro-Val-His-His-Leu-Asp-Gln-Ser-Ile-Phe-Arg) Minimum 97% (HPLC) Inhibits the enzymatic and biological activity of angiogenin [112173-49-6] FW 1781.0	500 μ g 31.50 1 mg 52.50 5 mg 175.00	

PRODUCT NUMBER	US \$	PRODUCT NUMBER	US \$
(Continuation of)			
ANGIOGENIN FRAGMENTS			
A 9304	Fragment 108-123 (Glu-Asn-Gly-Leu-Pro-Val-His-Leu-Asp-Gln-Ser-Ile-Phe-Arg-Arg-Pro) Minimum 97% (HPLC) Inhibits the enzymatic and biological activity of angiogenin, including neovascularization [112173-48-5] FW 1878.1	500 μ g 33 1 mg 55 5 mg 187	
A 1289	APAMIN (Cys-Asn-Cys-Lys-Ala-Pro-Glu-Thr-Ala-Leu-Cys-Ala-Arg-Arg-Cys-Gln-Gln-His-NH ₂) [Disulfide Bridges: 1-11; 3-15] From Bee Venom Minimum 93% (HPLC) The only polypeptide neurotoxin that is known to pass the blood-brain barrier. Ref.: 1. Van Rietschoten, J., et al., Eur. J. Biochem 56, 35 (1975). 2. Hughes, M., et al., Proc. Nat. Acad. Sci. USA, 7 1308 (1962). [24345-10-2] FW 2027.3	500 μ g 68 1 mg 122 5 mg 374	
A 4183	APOLIPOPROTEIN B FRAGMENT 3358-3372 AMIDE (Thr-Arg-Leu-Thr-Arg-Lys-Arg-Gly-Leu-Lys-Leu-Ala-Thr-Ala-Leu-NH ₂) Minimum 97% (HPLC) Anti-proliferative peptide Ref.: Corbin, A.D., et al., BBRC, 154, 741 (1988). [117047-99-1] FW 1697.1	250 μ g 54 1 mg 150	
A 2152	ARG-GLY-PHE-PHE-TYR-THR-PRO-LYS-ALA See: Insulin Chain B Fragment 22-30 Page 1145	1 mg 15 5 mg 40	
A 2541	ARG-GLY-PRO-PHE-PRO-ILE Minimum 90% (HPLC) Sexual agglutination peptide Ref.: Aoyagi, H., Experientia, 33, 870 (1977). [64566-61-6] C ₂₇ H ₄₀ N ₁₀ O ₇ FW 685.8	1 mg 20 5 mg 60	
A 4777	ARG-HIS-PHE Diacetate Salt Minimum 97% (HPLC) [105931-68-8] C ₂₀ H ₃₀ N ₁₀ O ₄ • 2C ₂ H ₄ O ₂ FW 578.4	1 mg 20 5 mg 60	
A 2042	ARG-LYS-ASP-VAL-TYR (Thymopoietin II Fragment 32-36; TP-5) Acetate Salt Minimum 97% (HPLC) Active fragment of thymopoietin II Ref.: Goldstein, G., et al., Science, 204, 1309 (1979). [69558-55-0] C ₂₀ H ₃₀ N ₁₀ O ₅ FW 679.8 (for free base)	5 mg 25 25 mg 100	
A 2791	ARG-LYS-GLU-VAL-TYR (Splenin Fragment 32-36; Splenopentin; SP-5) Acetate Salt Minimum 97% (HPLC) Active fragment of bovine splenin Ref.: Goldstein, G., et al., Proc. Nat. Acad. Sci. U.S.A., 71, 2847 (1984). [105184-37-0] C ₂₁ H ₃₀ N ₁₀ O ₅ FW 693.8 (for free base)	5 mg 21 25 mg 100	
A 2791	ARG-SER-ARG-HIS-PHE Minimum 97% (HPLC)	500 μ g 11 1 mg 3 5 mg 10	

PEPTIDES

PRODUCT NUMBER	US \$	PRODUCT NUMBER	US \$
ALA-LEU-ILE-LEU-THR-LEU-VAL-1 SER	1 mg 16.50 5 mg 55.00	ALA-SER-THR-THR-THR-ASN-TYR-250	250 µg 16.10 1 mg 40.00 5 mg 150.00
Minimum 90% (HPLC) Inhibitor of the sex pheromone cPDI of <i>Streptococcus faecalis</i> . Ref.: Mori, M., et al., <i>J. Bacteriol.</i> , 169 , 1747 (1987). [120116-56-5] C ₂₂ H ₃₇ N ₅ O ₁₁ FW 829.0		o-ALA-SER-THR-THR-THR-ASN-250	250 µg 16.10 1 mg 40.00 5 mg 150.00
ALA-LYS-PRO-SER-TYR-HYP-500	500 µg 64.80 1 mg 108.00 5 mg 360.00	A 2422	
HYP-THR-TYR-LYS Minimum 97% (HPLC) Bioadhesive peptide Ref.: Swerdloff, M.D., <i>Int. J. Peptide Protein Res.</i> , 33 , 318 (1989). [119106-85-3] FW 1183.3		TYR-THR AMIDE (<i>o</i> -Ala ¹ -Peptide T amide) Acetate Salt Minimum 97% (HPLC) HIV inhibitor. Ref.: Pert, C.B., et al., <i>Proc. Nat. Acad. Sci. USA</i> , 83 , 9254 (1986). [106362-32-7] C ₂₂ H ₃₂ N ₄ O ₁₅ FW 857.9 (for free base)	
ALA-PRO-ARG-LEU-ARG-PHE-TYR-1 mg	19.85	ALA-LYS(TFA)-PRO-SER-TYR-500	500 µg 64.80
(<i>o</i> -Bag Cell Peptide 1-7) Minimum 97% (HPLC) Peptide content: Approx. 70% Ref.: Rothman, B.S., et al., <i>Proc. Nat. Acad. Sci. USA</i> , 80 , 5753 (1983). [87549-54-0] C ₂₂ H ₃₂ N ₄ O ₁₅ FW 922.1	5 mg 66.15	HYP-HYP-THR-TYR-LYS Minimum 97% (HPLC) Bioadhesive peptide Ref.: Swerdloff, M.D., <i>Int. J. Peptide Protein Res.</i> , 33 , 318 (1989). [125383-20-2] FW 1279.3	1 mg 108.00 5 mg 360.00
ALA-PRO-ARG-LEU-ARG-PHE-TYR-83 SER	1 mg 20.95 5 mg 69.95	ALDOSTERONE SECRETION	50 µg 34.05
(<i>o</i> -Bag Cell Peptide 1-8) Minimum 97% (HPLC) Peptide content: Approx. 70% Ref.: Rothman, B.S., et al., <i>Proc. Nat. Acad. Sci. USA</i> , 80 , 5753 (1983). [87549-53-9] FW 1009.2		A 7555	100 µg 56.70 500 µg 189.00
ALA-PRO-ARG-LEU-ARG-PHE-TYR-1 mg	22.05	INHIBITING FACTOR (1-35) Bovine (ASIF; Ala-Leu-Arg-Gly-Pro-Lys-Met-Met-Arg-Asp-Ser-Gly-Cys-Phe-Gly-Arg-Arg-Leu-Asp-Arg-Ile-Gly-Ser-Leu-Ser-Gly-Leu-Gly-Cys-Asn-Val-Leu-Arg-Arg-Tyr) [Disulfide Bridge: 13-29] Minimum 97% (HPLC) Occurs with bovine adrenal ANF in brain cells and competes more strongly than porcine BNP for bovine adrenal ANF receptors. Ref.: Nguyen, T.T., et al., <i>Endocrinology</i> , 124 , 1591 (1989). [120249-06-1] FW 3910.6	
(<i>o</i> -Bag Cell Peptide 1-9) Minimum 97% (HPLC) Peptide content: Approx. 70% Ref.: Rothman, B.S., et al., <i>Proc. Nat. Acad. Sci. USA</i> , 80 , 5753 (1983). [87549-52-8] FW 1122.3	5 mg 73.50	ALLATOSTATINS	
ALA-PRO-GLY-PRO-ARG-500	500 µg 14.40	Inhibitors of juvenile hormone synthesis. Sequences are highly conserved within the six C-terminal amino acids. Ref.: Woodhead, A.P., et al., <i>Proc. Nat. Acad. Sci.</i> , 88 , 5997 (1989).	
Minimum 97% (HPLC) Collapsin activation peptide Ref.: Erlanson-Albertsson, C. and Larsson, A., <i>Regulatory Peptides</i> , 22 , 325 (1988). [117830-79-2] C ₂₁ H ₃₂ N ₄ O ₆ FW 496.6	1 mg 26.00 5 mg 93.00	A 9929	500 µg 23.50 1 mg 39.20 5 mg 156.80
ALA-PRO-GLY-TRP-NH₂-1 mg	15.00	ALLATOSTATIN I	
Acetate Salt Minimum 97% (HPLC) Neurotransmitter peptide involved with snail reproduction Ref.: Minalata, H., et al., <i>Comp. Biochem. Physiol.</i> , 100C , 565 (1991). [144110-40-7] C ₂₇ H ₃₄ N ₄ O ₆ FW 428.5 (for free base)	5 mg 50.00 25 mg 200.00	(Ala-Pro-Ser-Gly-Ala-Gln-Arg-Leu-Tyr-Gly-Phe-Gly-Leu-NH ₂) Minimum 95% (HPLC) [123338-10-3] FW 1335.5	
ALA-SER-HIS-LEU-GLY-LEU-ALA-250	250 µg 13.60	ALLATOSTATIN II	500 µg 20.60 1 mg 34.80 5 mg 137.20
ARG (Anaphylatoxin C3a Fragment 70-77) Minimum 97% (HPLC) Ref.: Hugli, T.E. and Erickson, B.W., <i>Proc. Nat. Acad. Sci. USA</i> , 74 , 1826 (1977). [63555-63-5] C ₂₉ H ₄₂ N ₁₀ O ₁₀ FW 823.9	1 mg 31.60 5 mg 100.00	(Gly-Asp-Gly-Arg-Leu-Tyr-Ala-Phe-Gly-Leu-NH ₂) Minimum 97% (HPLC) [123338-11-1] FW 1067.2	
ALA-SER-THR-THR-THR-ASN-250	250 µg 17.55	ALLATOSTATIN III	500 µg 17.65 1 mg 29.40 5 mg 117.60
3,5-DIMETHOXY-TYR-THR ([3,5-Dimethoxy-Tyr ²]-Peptide T) Minimum 97% (HPLC) [128551-40-6] FW 1109.7	1 mg 49.00 5 mg 196.00	(Gly-Gly-Ser-Leu-Tyr-Ser-Phe-Gly-Leu-NH ₂) Minimum 97% (HPLC) [123338-12-5] C ₂₇ H ₃₂ N ₁₀ O ₁₂ FW 899.0	

How to use price list - page 2.

MISCELLANEOUS PEPTIDES

PRODUCT NUMBER	US \$	PRODUCT NUMBER	US \$
A 2297		ALLATOSTATIN B₂	250 µg 43.00 1 mg 119.40
(Peptide T) Acetate Salt Minimum 97% (HPLC) HIV inhibitor. Ref.: Pert, C.B., et al., <i>Proc. Nat. Acad. Sci. USA</i> , 83 , 9254 (1986). [106362-32-7] C ₂₂ H ₃₂ N ₄ O ₁₅ FW 857.9 (for free base)		(Ala-Tyr-Ser-Tyr-Val-Ser-Glu-Tyr-Lys-Arg-Leu-Pro-Val-Tyr-Asn-Phe-Gly-Leu-NH ₂) Cockroach Minimum 97% (HPLC) Ref.: <i>Proc. Nat. Acad. Sci. USA</i> , 88 , 2412 (1991). [134760-78-4] FW 2168.5	
A 2422		ALLATOTROPIN	250 µg 17.00 1 mg 47.25
TYR-THR AMIDE (<i>o</i> -Ala ¹ -Peptide T amide) Acetate Salt Minimum 97% (HPLC) HIV inhibitor. Ref.: Pert, C.B., et al., <i>Proc. Nat. Acad. Sci. USA</i> , 83 , 9254 (1986). [106362-34-9] C ₂₂ H ₃₂ N ₄ O ₁₅ FW 856.9 (for free base)		(Gly-Phe-Lys-Asn-Val-Glu-Met-Met-Thr-Na-Arg-Gly-Gly-Phe-NH ₂) Manduca sexta Minimum 97% (HPLC) Peptide content: Approx. 70% Novel neurohormone which stimulates the release of juvenile hormone from the corpora allata in vitro. Ref.: Kataoka, H., et al., <i>Science</i> , 243 , 1481 (1989). [120928-88-3] FW 1486.8	
A 7185		AMASTATIN	
ALA-LYS(TFA)-PRO-SER-TYR-500	500 µg 64.80	Sec. Enzyme Inhibitors Page 1097	
HYP-HYP-THR-TYR-LYS Minimum 97% (HPLC) Bioadhesive peptide Ref.: Swerdloff, M.D., <i>Int. J. Peptide Protein Res.</i> , 33 , 318 (1989). [125383-20-2] FW 1279.3	1 mg 108.00 5 mg 360.00	AMYLIN FRAGMENT 8-37	100 µg 39.40 500 µg 131.25
ALDOSTERONE SECRETION	50 µg 34.05	(Ala-Thr-Gln-Arg-Leu-Ala-Asn-Phe-Leu-Val-His-Ser-Ser-Asn-Asn-Phe-Gly-Ala-Ile-Leu-Ser-Ser-Thr-Asn-Val-Gly-Ser-Asn-Thr-Tyr-NH ₂) Human; Minimum 90% (HPLC) [135702-23-7] FW 3183.5	
A 7555		AMYLOID β-PROTEIN FRAGMENTS	
INHIBITING FACTOR (1-35) Bovine (ASIF; Ala-Leu-Arg-Gly-Pro-Lys-Met-Met-Arg-Asp-Ser-Gly-Cys-Phe-Gly-Arg-Arg-Leu-Asp-Arg-Ile-Gly-Ser-Leu-Ser-Gly-Leu-Gly-Cys-Asn-Val-Leu-Arg-Arg-Tyr) [Disulfide Bridge: 13-29] Minimum 97% (HPLC) Occurs with bovine adrenal ANF in brain cells and competes more strongly than porcine BNP for bovine adrenal ANF receptors. Ref.: Nguyen, T.T., et al., <i>Endocrinology</i> , 124 , 1591 (1989). [120249-06-1] FW 3910.6	100 µg 56.70 500 µg 189.00	A 4309	[Glu ¹⁴]-Fragment 1-16 100 µg 15.75 500 µg 52.50
ALLATOSTATINS		(Asp-Ala-Glu-Phe-Arg-His-Asp-Ser-Gly-Tyr-Gln-Val-His-His-Gln-Lys-Leu-Val-Phe-Phe-Ala-Glu-Asp-Val-Gly-Ser-Asn-Lys) Minimum 97% (HPLC) [133605-53-5] FW 1954.0	
Inhibitors of juvenile hormone synthesis. Sequences are highly conserved within the six C-terminal amino acids. Ref.: Woodhead, A.P., et al., <i>Proc. Nat. Acad. Sci.</i> , 88 , 5997 (1989).		A 0184	Fragment 1-28 100 µg 37.80 500 µg 120.00
A 9929		(Asp-Ala-Glu-Phe-Arg-His-Asp-Ser-Gly-Tyr-Gln-Val-His-His-Gln-Lys-Leu-Val-Phe-Phe-Ala-Glu-Asp-Val-Gly-Ser-Asn-Lys) Minimum 97% (HPLC) [109770-29-8] FW 3262.5	
ALLATOSTATIN I	500 µg 23.50 1 mg 39.20 5 mg 156.80	A 1434	[Gln ¹⁴]-Fragment 1-28 100 µg 39.40 500 µg 131.25
(Ala-Pro-Ser-Gly-Ala-Gln-Arg-Leu-Tyr-Gly-Phe-Gly-Leu-NH ₂) Minimum 95% (HPLC) [123338-10-3] FW 1335.5		(Asp-Ala-Glu-Phe-Arg-His-Asp-Ser-Gly-Tyr-Gln-Val-His-His-Gln-Lys-Leu-Val-Phe-Phe-Ala-Glu-Asp-Val-Gly-Ser-Asn-Lys) Minimum 97% (HPLC) Ref.: Castano, E.M., et al., <i>Biochem. Biophys. Res. Commun.</i> , 141 , 782 (1986). Whitson, J.S., et al., <i>Science</i> , 243 , 1488 (1989). [106686-61-7] FW 3261.5	
ALLATOSTATIN II	500 µg 20.60 1 mg 34.80 5 mg 137.20	A 0189	Fragment 1-88 100 µg 47.25 500 µg 157.50
(Gly-Asp-Gly-Arg-Leu-Tyr-Ala-Phe-Gly-Leu-NH ₂) Minimum 97% (HPLC) [123338-11-1] FW 1067.2		(Asp-Ala-Glu-Phe-Arg-His-Asp-Ser-Gly-Tyr-Gln-Val-His-His-Gln-Lys-Leu-Val-Phe-Phe-Ala-Glu-Asp-Val-Gly-Ser-Asn-Lys-Gly-Ala-Ile-Ile-Gly-Leu-Met-Val-Gly-Gly) Minimum 97% (HPLC) Ref.: Yankner, B.A., et al., <i>Science</i> , 250 , 279 (1990). Malison, M.P., et al., <i>J. Neurosci.</i> , 12 , 376 (1992). [131438-74-9] FW 4131.6	
ALLATOSTATIN III	500 µg 17.65 1 mg 29.40 5 mg 117.60		
(Gly-Gly-Ser-Leu-Tyr-Ser-Phe-Gly-Leu-NH ₂) Minimum 97% (HPLC) [123338-12-5] C ₂₇ H ₃₂ N ₁₀ O ₁₂ FW 899.0			
ALLATOSTATIN IV	500 µg 14.70 1 mg 24.50 5 mg 98.00		
(Asp-Arg-Leu-Tyr-Ser-Phe-Gly-Leu-NH ₂) Minimum 97% (HPLC) [123338-13-6] C ₂₇ H ₃₂ N ₁₀ O ₁₂ FW 969.1			

Bulk quantities available through SAF Bulk Chemicals - see page 19.

1129